REMARKS

The Examiner's allowance of claims 24, 25 and 31, and his indication of allowability with respect to claims 5, 18, 26, 28, 29 and 31, is gratefully acknowledged. Claims 28 and 29 have been rewritten in independent form with this response as new claims 32 and 33, respectfully.

Reconsideration of the Examiner's objection to claims 26 and 31 is respectfully requested.

Claim 31 has been amended with this response to change its dependency from claim 1 to claim 30. It is thus respectfully submitted that the Examiner's objection has been overcome.

Reconsideration of the Examiner's rejection of claims 1, 2, 4, 6-9, 12-15, 17, 19-22 and 27 under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. is respectfully requested.

In order to anticipate a claimed invention, a cited reference must teach each and every element of the invention. In the present case, however, Yamamoto et al. does not teach the element in claims 1 and 14 (from which the other claims depend) of "(c) processing at least one of said digital records with a two-dimensional digital filter *independently* of the other said digital records" [emphasis added]. To the contrary, Yamamoto et al. specifically teaches an image compensation algorithm that, for each color record, is a function of all of the other color records. See, e.g., Col. 5, Line 50 to Col. 6, Line 1, and the equations which immediately precede this section. Indeed, Yamamoto et al. points to this feature as a point of distinction over the prior art. Thus, Yamamoto et al. states, at Col. 5, Line 61 to Col. 6, Line 1, that

> In compensating the phase characteristics and resolution characteristics of a certain color signal component, the compensation processing, unlike the conventional technique, employs the other color component signals as well. That is, for each of color component signals, the phase and resolution characteristic compensation processing is performed using a corresponding color and the other colors of a pixel of interest to be compensated and pixels near the pixel of interest.

By contrast, in the approach described and claimed in the present application, the compensation algorithm is applied to at least one of the color

records indsependently of the other color records. Thus, in the example given at Page 9, Lines 13-24, the digital filter is applied to the green color record independently of the other color records. See also Page 13, Lines 18-20, where it is stated that "Note that for one color record, taken as the reference record, no shift is needed, so a zero-phase filter will be designed."

Applicant also notes that Yamamoto et al. does not anticipate the presently claimed invention because it does not teach the element of a two-dimensional filter as is required by claims 1 and 14. The Examiner appears to concede as much, but argues in essence that this element of the invention is nonetheless inherent in Yamamoto et al. In particular, the Examiner points to the reference to chromatic aberrations at Col. 16, Lines 28-45 of Yamamoto et al.:

> Moreover, the present invention would also be effective in correcting differences in phase and resolution characteristics among R, G and B signal components resulting from factors other than the structure of the sensor used. For example, the correction process of the present invention would also be effective in the case where there are differences in resolution or phase among R, G, and B signals resulting from the chromatic aberration of an imaging optical system used.

The Examiner then argues, in essence, that, based on the Hecht reference submitted by Applicant, chromatic aberrations are two-dimensional, and would thus inherently require a two-dimensional digital filter to correct for the color misregistration between the two-dimensional color records. In particular, the Examiner argues that simply performing dot sequential error correction as described in the detailed embodiments of Yamamoto et al. would not correct for chromatic aberrations.

Applicant first notes that, even if the Examiner were correct in asserting that the teachings of Yamamoto et al. could somehow be construed to inherently involve the use of a two-dimensional digital filter in some instances, it does not follow that this two-dimensional digital filter is used to process at least one of the color records independently of the other color records, as required by claims 1 and 14. Hence, the Examiner has not established a prima facie case of anticipation.

Furthermore, Applicant respectfully reminds the Examiner of the very high burden of proof that must be met in making a rejection based on

inherency. This standard is described in M.P.E.P. § 2112, entitled "Requirements of Rejection Based on Inherency; Burden of Proof":

> The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. ... >"To establish inherency, the extrinsic evidence `must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " ...

In the present case, the Examiner has not met this burden of proof because, contrary to his assertion, not all chromatic aberrations are of a type that cannot be corrected by performing dot sequential error corrections of the type taught in Yamamoto et al., and hence not all chromatic aberrations require use of a two-dimensional digital filter. In particular, the Examiner is directed to the reference set forth in Exhibit A, the relevant portion of which is repeated herein:

> One discriminates between two types of CA. ... Obliquely incident light leads to the transverse chromatic aberration (TCA), also known as lateral color. It refers to sidewards displaced foci. In the absence of LCA, all colors are in focus in the same plane, but the image magnification depends on the wavelength. This behavior is illustrated in figure 2. The occurrence of TCA implies that the focal length depends on the wavelength, whereas the occurrence of LCA in a complex lens does not strictly require a variable focal length. This seems counterintuitive, but in a lens corrected for LCA the principal planes do not need to coincide for all colors. Since the focal length is determined by the distance from the rear principal plane to the image plane, the focal length may depend on the wavelength even when all images are in the same plane.

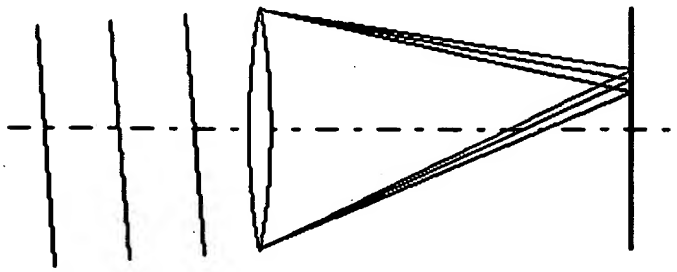

Figure 2. Illustration of TCA. The size of the image varies from one color to the next.

The Examiner will appreciate from this reference that transverse chromatic aberrations are one type of chromatic aberration that, for a given color (wavelength), can be corrected by performing dot sequential error correction of the type taught in Yamamoto et al. Hence, the mere statement in Yamamoto et al. that the approach described therein can be used to correct chromatic aberrations does not *necessarily* imply use of a two-dimensional digital filter (as required to establish inherency; see the section of M.P.E.P. § 2112 quoted above), let alone the use of such a filter to process at least one of the color records independently of the other color records. Thus, this feature of the claimed invention is not inherent in the teachings of Yamamoto et al., the Hecht reference notwithstanding.

Reconsideration of the Examiner's rejection of claims 3 and 16 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. in view of Herman et al. is respectfully requested.

Claims 3 and 16 depend from claims 1 and 14, respectively. Applicants have already noted the infirmities in the Examiner's rejection of claims 1 and 14, and hence the reasons for patentability thereof. It is thus respectfully submitted that claims 3 and 16 are likewise patentable.

With respect to the new claims added with this response, new claims 32 and 33 are essentially claims 28 and 29 rewritten in independent form, the latter of which were deemed allowable by the Examiner.

New claims 34-37 specify that the feature referred to in claim 1 is a registration feature. Support for these claims can be found at Page 8, Lines 12-17 of the specification, where it is stated that:

> In the description that follows, the features of interest are a neutral (having red, green and blue spectral components) registration element or a slanted edge with a moderate to sharp transition on the scale at which the image sampling is to be applied. It is also possible to estimate the amount of color registration from various other image features, such as traditional cross-hairs ('+'), or edges oriented in other ways.

The Examiner notes in his comments that Yamamoto et al. teaches an "image feature detector" (4), which is depicted in FIG. 8 of that reference. However, when Yamamoto et al. is construed as a whole for what it fairly teaches to one skilled in the art, it is clear that the use of the "image feature detector" referred to therein does not involve a "registration feature" as that term is used in the present claims. In particular, registration features (e.g., crosshairs) are features which are artificially introduced into the image to permit color registration. By contrast, the "image feature detector" of Yamamoto et al. does not utilize a registration feature. Rather, this detector examines the coloration of an image in the vicinity of a given pixel and uses that information to compensate for phase differences (hue shifts) and resolution imbalance among color image signals obtained by reading a document by a color image sensor in which the effective reading positions or the aperture sizes vary among color components. See, e.g., Col. 16, Lines 38-45 of Yamamoto et al. Hence, the image features being detected in Yamamoto et al. are not registration features as is the case in the presently claimed invention, but are whatever image coloration features happen to be present in the vicinity of a pixel being operated upon.

This fact is underscored by Yamamoto et al. itself. Thus, at Col. 11, Lines 62-66, Yamamoto et al. states:

> With the second embodiment, an image signal obtained by the image reader section 1 is input to an image feature detecting section 4, which detects colors of regions on both sides of a pixel of interest as image features of regions neighboring the pixel of interest.

Applicant notes the Examiner's comment in the present Office Action:

> The Examiner believes that the patentable aspect of Applicant's invention lies within detecting a feature within the digital color records .... More specifically, detecting a feature using elements of the spatial frequency response method for a slanted edge feature according to the ISO 12233 standard is not taught or suggested in the prior art, as elaborated below.

Applicant agrees with the Examiner that this is a patentable feature of the invention. However, as noted above, Applicant respectfully submits that this feature is not limited for patentability purposes solely to the use of the ISO 12233 standard.

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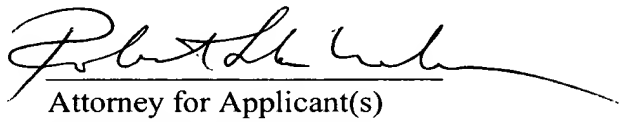
Applicant agrees with the Examiner that this is a patentable feature of the invention. However, as noted above, Applicant respectfully submits that this feature is not limited for patentability purposes solely to the use of the ISO 12233 standard.

It is respectfully submitted, therefore, that in view of the above amendments and remarks, that this application is now in condition for allowance, prompt notice of which is earnestly solicited.

Respectfully submitted,



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Enclosure: Exhibit A